UNBRIDLED LEARNING
THE VISION FOR KENTUCKY'S FUTURE

GRADE

5

KENTUCKY

K-PREP

Kentucky Performance Rating For Educational Progress

MATH SAMPLE ITEMS

Spring 2013

EVERY CHILD
PROFICIENT & PREPARED FOR SUCCESS
KENTUCKY DEPARTMENT OF EDUCATION

The following are the general guides that will be used to evaluate your responses to short-answer and extended-response questions in this test.

Kentucky Short-Answer Questions General Scoring Guide

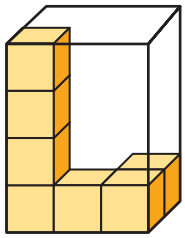
Score Point 2	• You complete all components of the question and communicate ideas clearly. • You demonstrate an understanding of the concepts and/or processes. • You provide a correct answer using an accurate explanation as support.
Score Point 1	• You provide a partially correct answer to the question and/or address only a portion of the question. • You demonstrate a partial understanding of the concepts and/or processes.
Score Point 0	• Your answer is totally incorrect or irrelevant.
Blank	• You did not give any answer at all.

Kentucky Extended-Response Questions
General Scoring Guide

Score Point 4	• You complete all important components of the question and communicate ideas clearly. • You demonstrate in-depth understanding of the relevant concepts and/or processes. • Where appropriate, you choose more efficient and/or sophisticated processes. • Where appropriate, you offer insightful interpretations or extensions (generalizations, applications, analogies).
Score Point 3	• You complete most important components of the question and communicate clearly. • You demonstrate an understanding of major concepts even though you overlook or misunderstand some less-important ideas or details.
Score Point 2	• You complete some important components of the question and communicate those components clearly. • You demonstrate that there are gaps in your conceptual understanding.
Score Point 1	• You show minimal understanding of the question. • You address only a small portion of the question.
Score Point 0	• Your answer is totally incorrect or irrelevant.
Blank	• You did not give any answer at all.

1

Kathy is packing a container with unit cubes. The container is in the shape of a rectangular prism, as seen in the figure below.



= 1 unit cube

Let n equal the total number of unit cubes Kathy can pack in the container. Which equation can be used to find n?

A $3 + 1 + 3 = n$

B $3 \times 1 \times 3 = n$

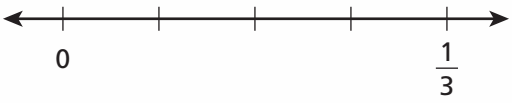
C $3 + 2 + 4 = n$

D $3 \times 2 \times 4 = n$

2

The number line shows how 4 friends equally shared $\frac{1}{3}$ of a cup of peanuts.

How the Friends Shared the Peanuts



How much did each friend get?

A $\frac{1}{12}$ cup

B $\frac{2}{7}$ cup

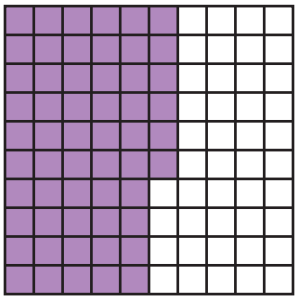
C $\frac{3}{4}$ cup

D $\frac{4}{3}$ cup

3

Keisha shaded this grid to show the weight of one paperback book.

Weight of Paperback Book



Keisha found the total weight of 6 paperbacks as 3.36 pounds. Which explanation best supports why Keisha did or did not find the correct weight for 6 paperbacks?

A Keisha did find the correct weight because 3.36 divided by 6 equals 0.56.

B Keisha did find the correct weight because 3.36 multiplied by 2 is 6.72.

C Keisha did not find the correct weight because when multiplying by a factor less than one, the product is always less than the other factor.

D Keisha did not find the correct weight because when multiplying by a factor less than one, the product is always greater than the other factor.

4

Brett correctly found the value of the expression shown below.

$$5 + 4 \times (3 - 1) + 1$$

Which number represents the value Brett found for the expression?

A 14

B 17

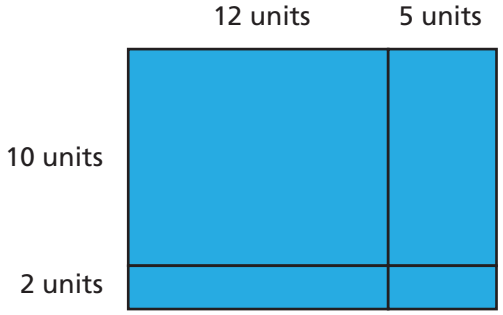
C 19

D 27

5

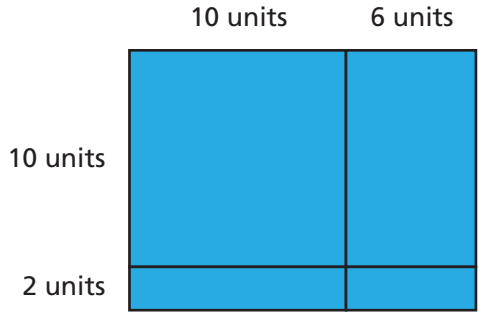
The Harper family is replacing the rectangular carpet in their family room with 192 square tiles that are all the same size. They will buy the tiles in boxes containing 12 tiles per box. Which area model could be used to figure out how many boxes of tiles the Harper family will need to buy in order to tile their family room?

Harper Family Room Rectangular Floor



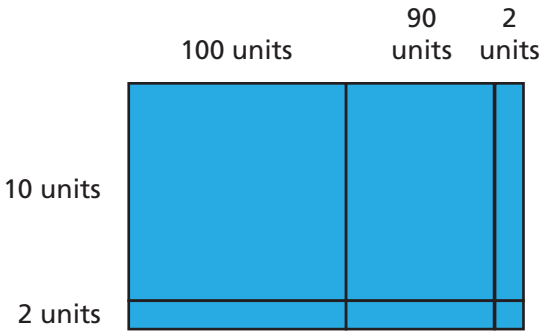
A

Harper Family Room Rectangular Floor



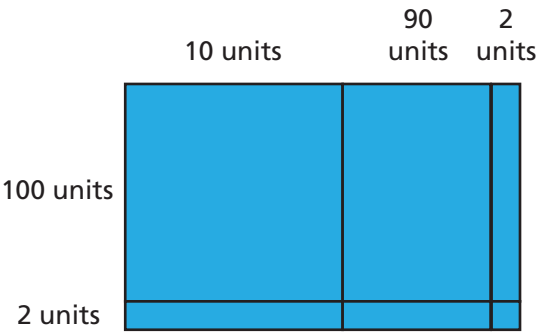
C

Harper Family Room Rectangular Floor



B

Harper Family Room Rectangular Floor



D

6

A pizza restaurant is having a special sale as listed below.

- 2 small pizzas for $10

The manager needs to complete the table below to share information about the sale with the customers.

Pizza Sales

Number	2					Rule:	Add 2
Cost	$10			$40		Rule:	Add 10

Part A Copy the table on your answer document, and use the rules to complete the table.

Part B Describe the relationship between the corresponding terms in the top row and the bottom row.

RUBRIC	
Score Point 2	• You complete all components of the question and communicate ideas clearly. • You demonstrate an understanding of the concepts and/or processes. • You provide a correct answer using an accurate explanation as support.
Score Point 1	• You provide a partially correct answer to the question and/or address only a portion of the question. • You demonstrate a partial understanding of the concepts and/or processes.
Score Point 0	• Your answer is totally incorrect or irrelevant.
Blank	• You did not give any answer at all.
Note: No part can be incomplete or incorrect and receive full credit.	

Correct Answer:

Part A:

Special Sale on Small Pizzas							
Number of Pizzas	2	4	6	8	10	Rule:	Add 2
Cost of Pizzas	10	20	30	40	50	Rule:	Add 10

Part B: Each term in the top row can be multiplied by 5 to arrive at the corresponding term in the bottom row.

OR

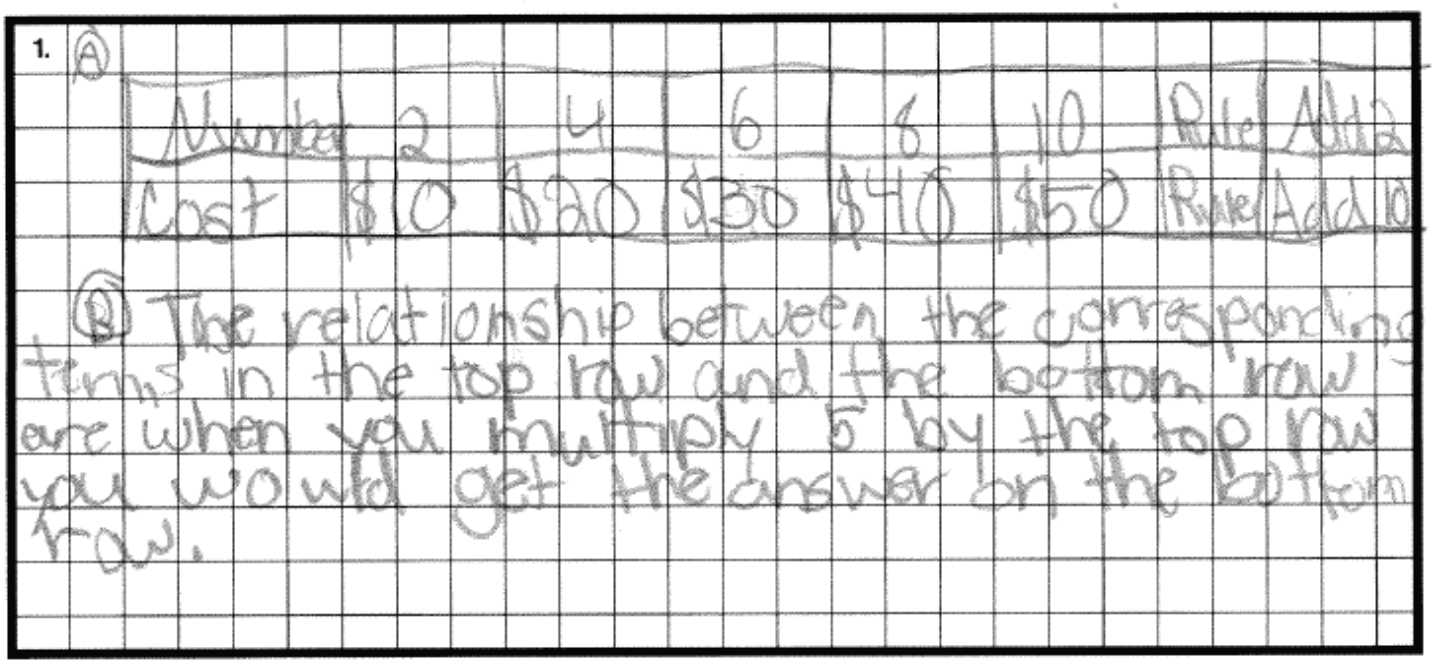
Each term in the bottom row can be divided by 5 to arrive at the corresponding term in the top row.

OR similar explanation

GRADE 5 — Mathematics

Annotated Student Response

SAMPLE 2-POINT RESPONSE



ANNOTATION — 2-POINT RESPONSE

The student completes all components of the question and communicates ideas clearly.

Part A: The student completes the table correctly.

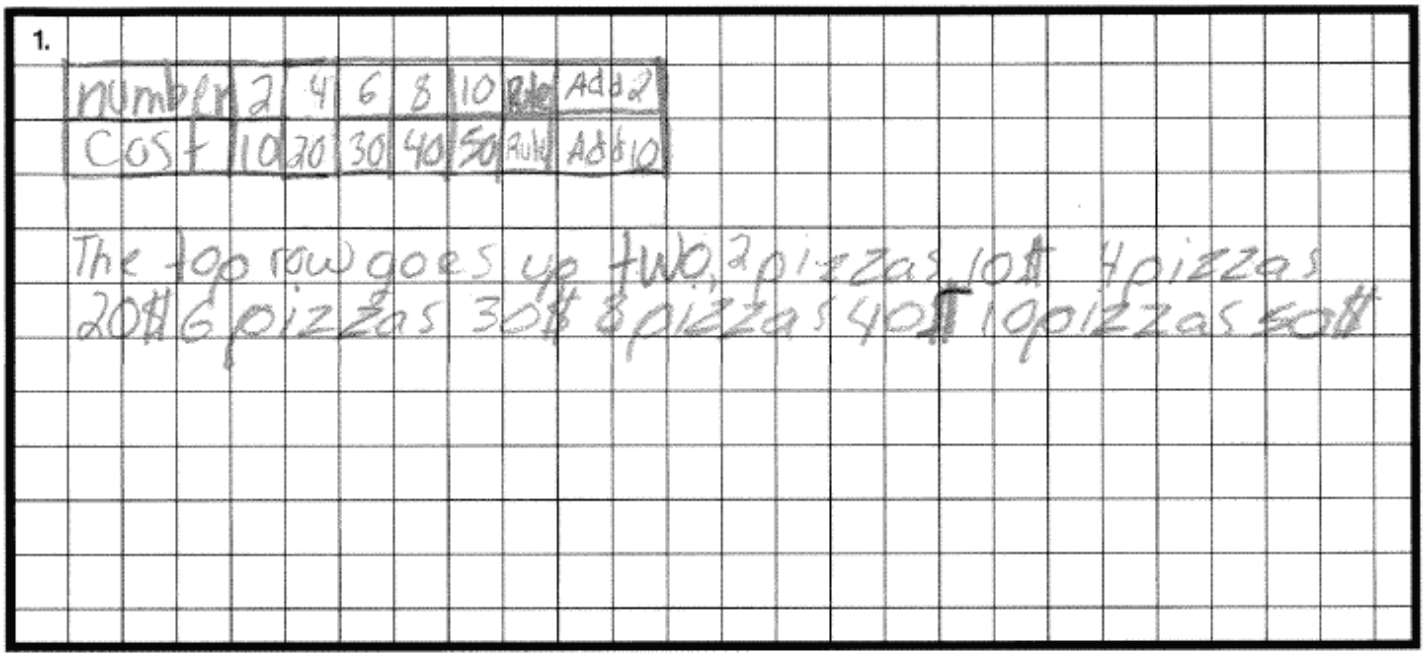
Part B: The student describes the relationship between the corresponding terms in the top row and the bottom row, *"…when you multiply 5 by the top row you would get the answer on the bottom row."*

Overall, the student earns 2 points.

GRADE 5 —Mathematics

Annotated Student Response

SAMPLE 1-POINT RESPONSE



ANNOTATION — 1-POINT RESPONSE

The student provides a partially correct answer to the question and addresses only a portion of the question.

Part A: The student completes the table correctly.

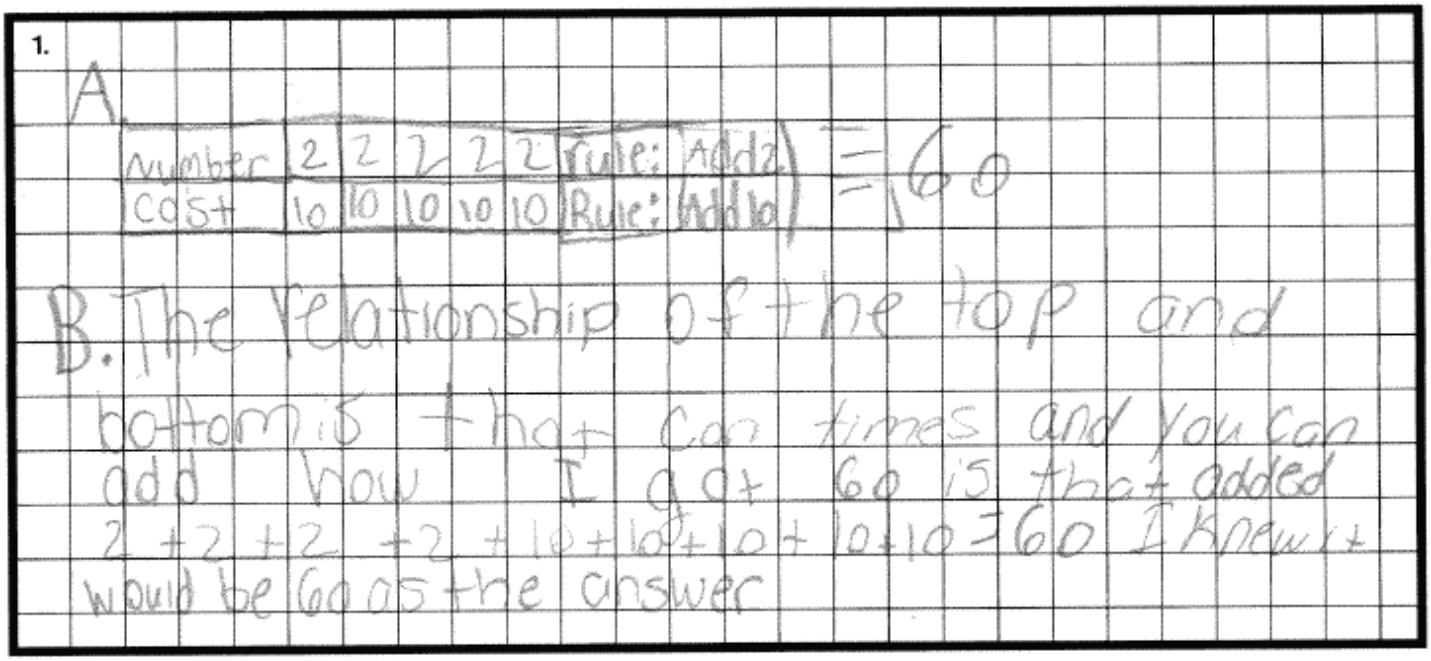
Part B: The student fails to describe the relationship between the corresponding terms in the top row and the bottom row.

Overall, the student earns 1 point.

GRADE 5 —Mathematics

Annotated Student Response

SAMPLE 0-POINT RESPONSE



ANNOTATION – 0-POINT RESPONSE

The student's answer is totally incorrect.

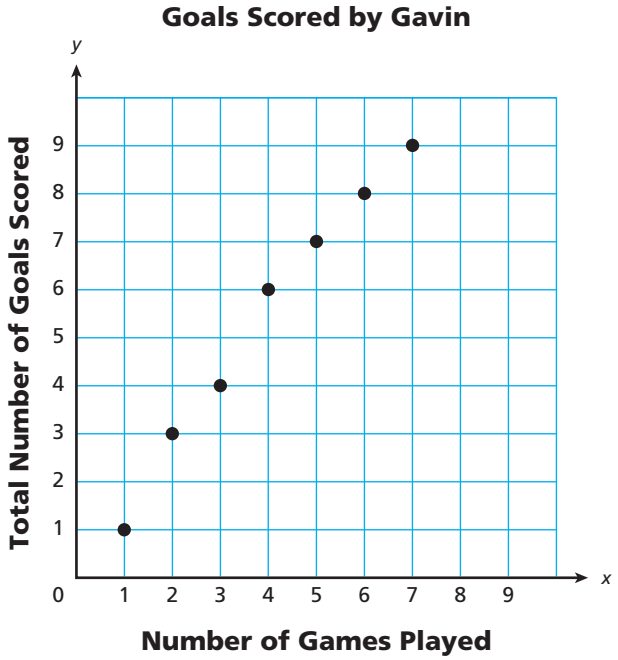
Part A The student completes the table incorrectly.

Part B The student fails to describe the relationship between the corresponding terms in the top row and the bottom row.

Overall, the student earns 0 points.

7

After each hockey game played, Gavin recorded the total number of goals he scored so far this season. The relationship between the number of games Gavin played and the total number of goals he scored is shown in the graph below.



Part A What does the point (4, 6) on the graph represent in terms of the number of games Gavin played and the number of goals he scored?

Part B How many goals did Gavin score in game 6? Explain your thinking.

RUBRIC	
Score Point 2	• You complete all components of the question and communicate ideas clearly. • You demonstrate an understanding of the concepts and/or processes. • You provide a correct answer using an accurate explanation as support.
Score Point 1	• You provide a partially correct answer to the question and/or address only a portion of the question. • You demonstrate a partial understanding of the concepts and/or processes.
Score Point 0	• Your answer is totally incorrect or irrelevant.
Blank	• You did not give any answer at all.
Note: No part can be incomplete or incorrect and receive full credit.	

Correct Answer:

Part A: Point (4, 6) represents the number of games Gavin played along with the cumulative goals he scored during the season up to and including game 4. The *x*-coordinate 4 represents the number of games Gavin played in and the *y*-coordinate 6 represents the total number of goals Gavin has made if you take the goals from games 1 through 4 and add them together.

OR similar explanation

Part B: Gavin scored 1 goal in game 6.

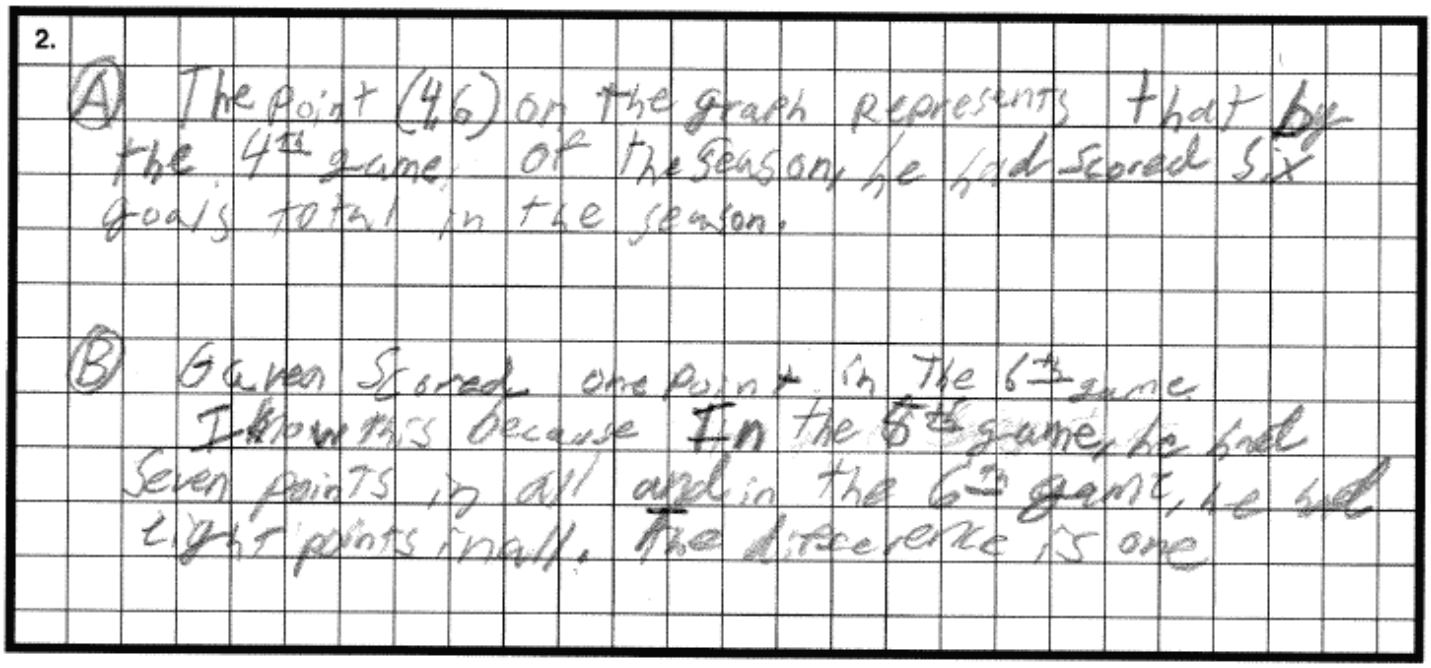
Gavin scored 1 goal in game 6 because the graph has the point at (6, 8). The 8 represents the total goals for the season after 6 games. To find the goals for only game 6 subtract the total number of goals scored after 5 games which is 7 goals resulting in 1 goal.

OR similar explanation

GRADE 5 — Mathematics

Annotated Student Response

SAMPLE 2-POINT RESPONSE



ANNOTATION — 2-POINT RESPONSE

The student completes all components of the question and communicates ideas clearly.

Part A: The student correctly explains what the point (4, 6) represents, *"…by the 4th game of the season, he had scored six goals total in the season."*

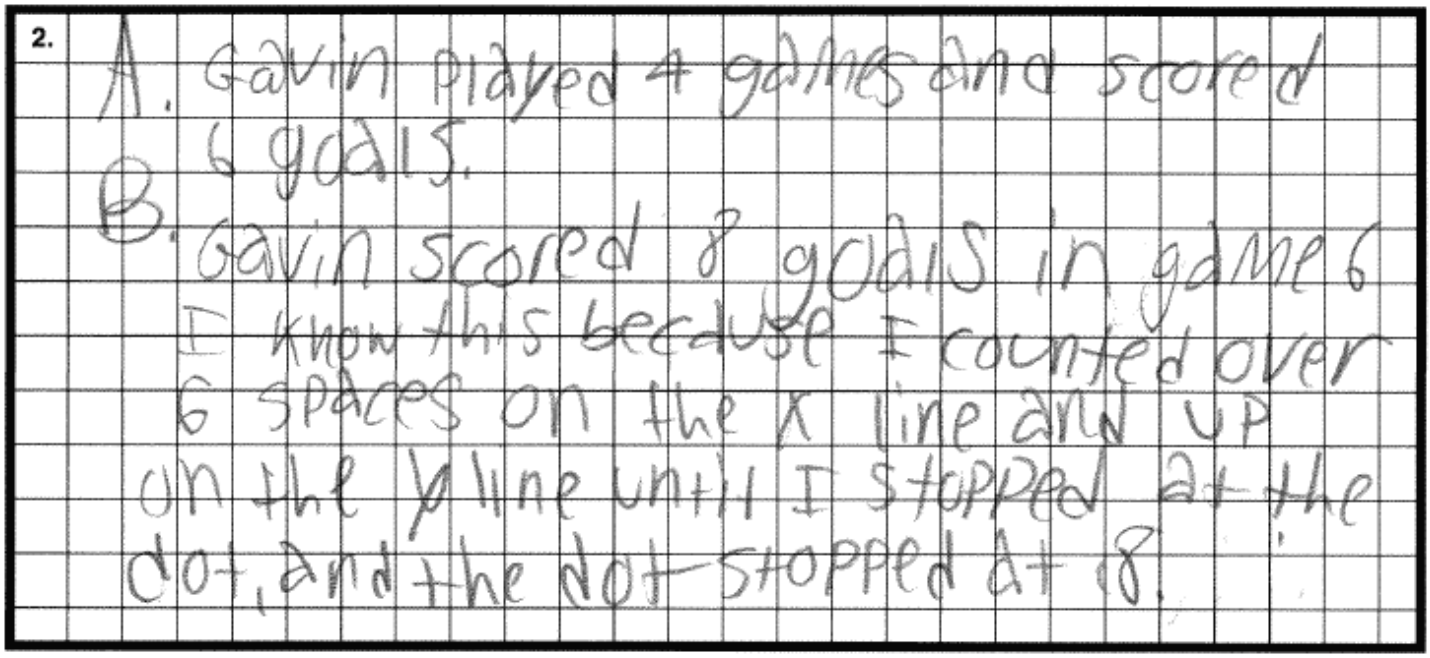
Part B: The student correctly answers the question *"one point in the 6th game"* and explains, *"…because In the 5th game he had seven points in all and in the 6th game he had eight points in all. The difference is one"*.

Overall, the student earns 2 points.

GRADE 5 —Mathematics

Annotated Student Response

SAMPLE 1-POINT RESPONSE



ANNOTATION — 1-POINT RESPONSE

The student provides a partially correct answer to the question and addresses only a portion of the question.

Part A: The student correctly explains what the point (4, 6) represents, *"Gavin played 4 games and scored 6 goals."*

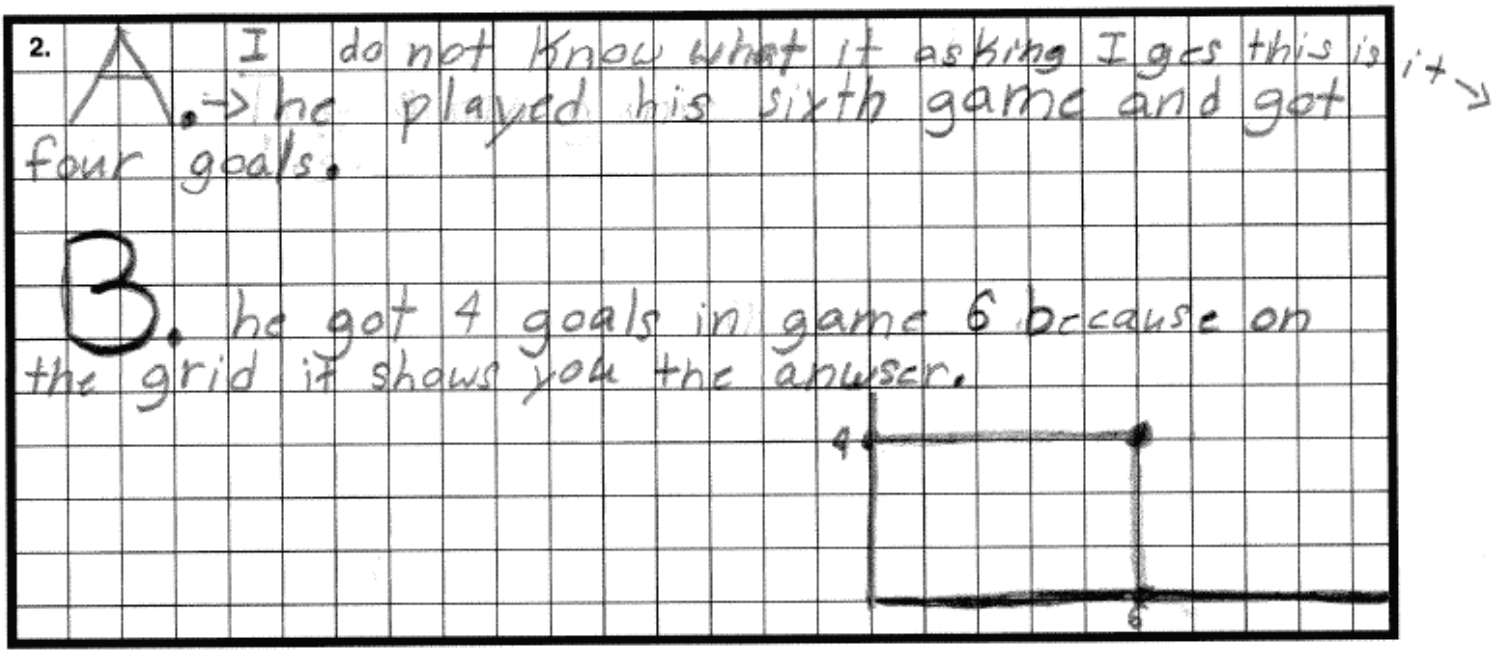
Part B: The student provides an incorrect answer of *"8 goals,"* and the explanation does not demonstrate an understanding of how to address the task.

Overall, the student earns 1 point.

GRADE 5 — Mathematics

Annotated Student Response

SAMPLE 0-POINT RESPONSE



ANNOTATION – 0-POINT RESPONSE

The student's answer is totally incorrect.

Part A The student incorrectly explains what the point (4,6) represents, *"he played his sixth game and got 4 goals."*

Part B The student incorrectly answers the question, *"he got 4 goals in game 6"*, and the explanation does not demonstrate an understanding of how to address the task.

Overall, the student earns 0 points.

8

Layla scored $\frac{3}{16}$ of the points in a basketball game. In the same game her teammate, Aubrey, scored $\frac{5}{12}$ of the points.

Part A Estimate whether the total points scored by Layla and Aubrey is less than, greater than, or equal to $\frac{3}{4}$. Explain your thinking.

Part B In a second basketball game, Layla scored $\frac{2}{5}$ of the points, and Aubrey scored $\frac{1}{4}$ of the points. What fraction of the total points scored by the team in the second game did Layla and Aubrey score? Show your work or explain your thinking.

RUBRIC

Score Point 4	Student scores 4 points.
Score Point 3	Student scores 3 – 3.5 points.
Score Point 2	Student scores 2 – 2.5 points.
Score Point 1	Student scores 0.5 – 1.5 points. OR Student demonstrates minimal understanding of solving word problems involving addition and subtraction of fractions.
Score Point 0	Student's response is totally incorrect or irrelevant.
Blank	No student response.
Note: No part can be incomplete or incorrect and receive full credit.	

Score Points

Part A: score 2 points correct answer with correct and complete work or explanation
OR
score 1 point correct answer with incomplete work
OR
score 0.5 point correct answer with no work
OR
incorrect answer due to a calculation error (work must be shown)
OR
correct answer with incorrect strategy
OR
some correct procedure
OR
vague explanation only

Part B: score 2 points correct answer with correct and complete work or explanation
OR
score 1 point correct answer with incomplete work
OR
score 0.5 point correct answer with no work
OR
incorrect answer due to a calculation error (work must be shown)
OR
some correct procedure
OR
vague explanation only

Correct Answer:

Part A Less than $\frac{3}{4}$.

The fraction $\frac{3}{16}$ is almost, but less than, $\frac{1}{4}$. The fraction $\frac{5}{12}$ is almost, but less than, $\frac{1}{2}$. We know that $\frac{1}{4}+\frac{1}{2}=\frac{3}{4}$, but since these fractions are both less than the benchmark fractions, the answer will be less than $\frac{3}{4}$.

OR similar explanation

Part B $\frac{13}{20}$

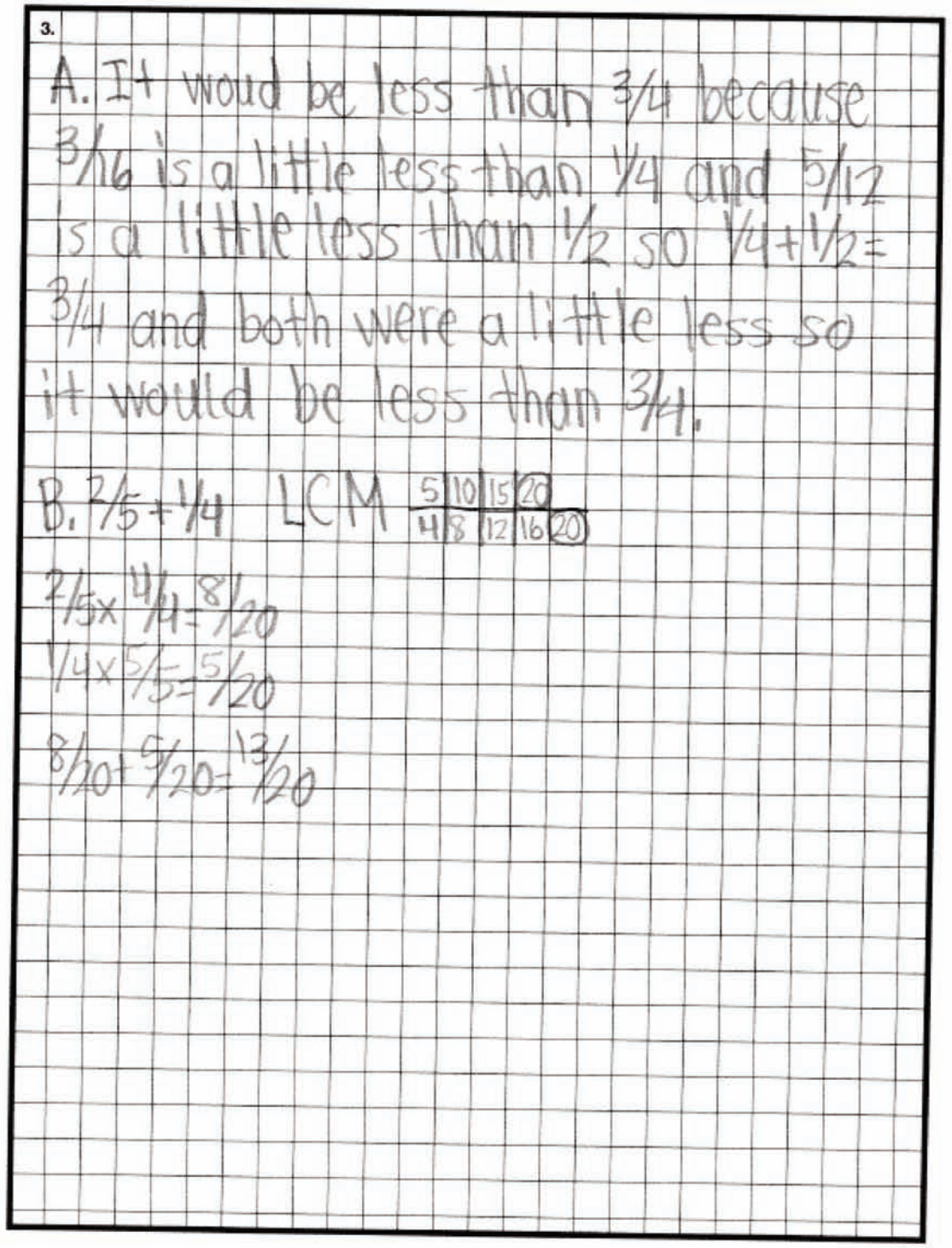
$$\frac{2}{5}+\frac{1}{4}=\frac{8+5}{20}=\frac{13}{20}$$

OR similar work

GRADE 5 —Mathematics

Annotated Student Response

SAMPLE 4-POINT RESPONSE **NOTES**



A 2.0

B 2.0

GRADE 5 —Mathematics

ANNOTATION - 4-POINT RESPONSE

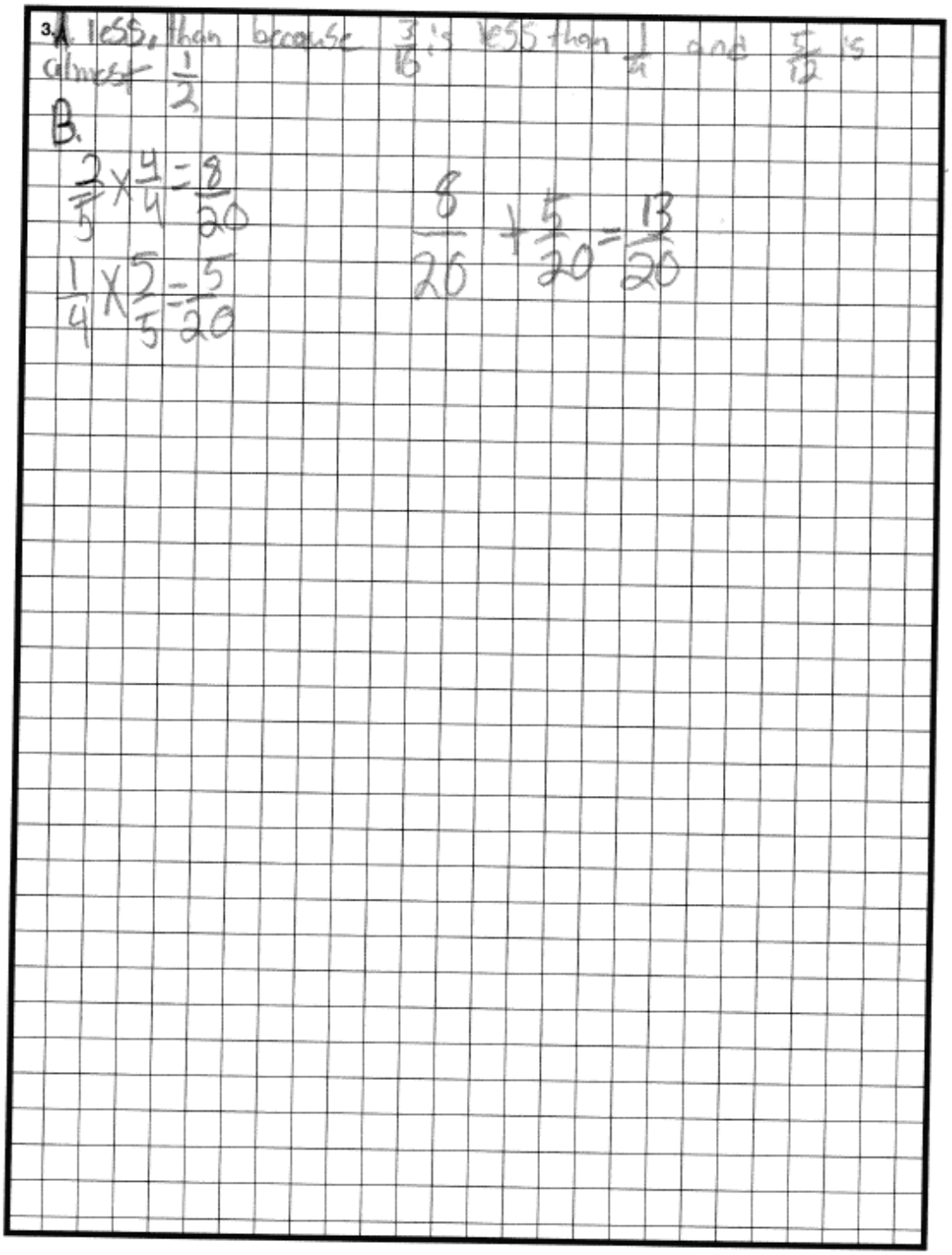
A The student correctly estimates "*It would be less than 3/4"* and explains, "*because 3/16 is a little less than ¼ and 5/12 is a little less than ½ so ¼ + ½ = ¾ and both were a little less so it would be less than 3/4."* (2 points)

B The student has a correct answer of *"13/20"* and correctly explains his thinking, first by finding the LCM of 5 and 4 which is 20 and converting the fractions to fractions with the lowest common denominator *"2/5 x 4/4 = 8/20, ¼ x 5/5 = 5/20"* and then adding *"8/20 + 5/20 = 13/20."* (2 points)

Overall, the student earns 4 points.

Annotated Student Response

SAMPLE 3-POINT RESPONSE **NOTES**



A 1.0

B 2.0

GRADE 5 —Mathematics

ANNOTATION - 3-POINT RESPONSE

A The student has a correct answer "*less*" but the explanation is not complete. The student estimates *"3/16 is less than ¼ and 5/12 is almost ½"* but fails to state that if the 2 fractions were added that the sum would be less than ¾. (1.0 point)

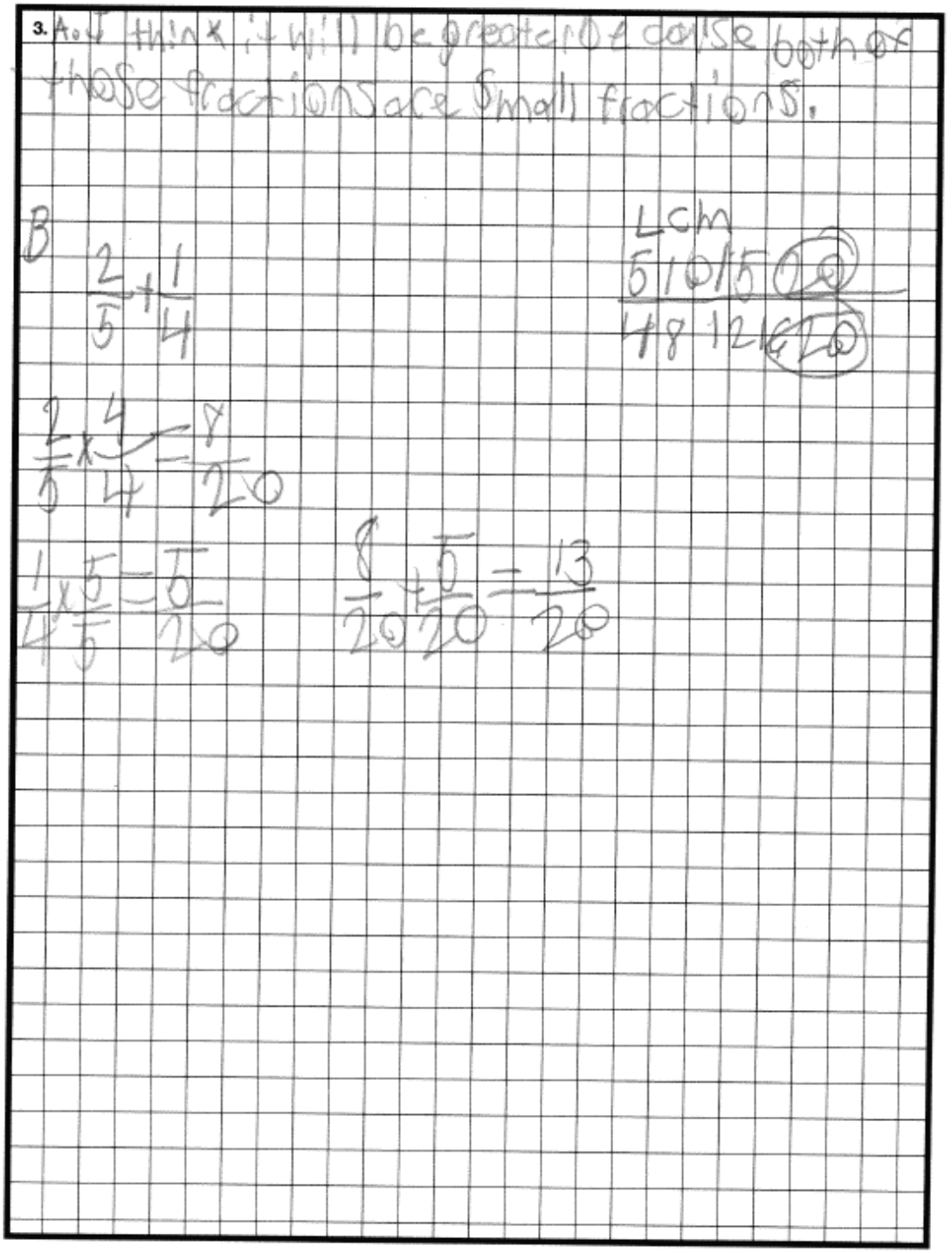
B The student has a correct answer *"13/20"* and correctly explains his thinking, converting the fractions to fractions with the lowest common denominator *"2/5 x 4/4 = 8/20, ¼ x 5/5 = 5/20"* and then adding, *"8/20 + 5/20 = 13/20."* (2 points)

Overall, the student earns 3 points.

GRADE 5 —Mathematics

Annotated Student Response

SAMPLE 2-POINT RESPONSE **NOTES**



A .0

B 2.0

GRADE 5 —Mathematics

ANNOTATION - 2-POINT RESPONSE

A The student has an incorrect answer "*I think it will be greater"* and an incorrect explanation *"…cause both of those fractions are small fractions."* (0 points)

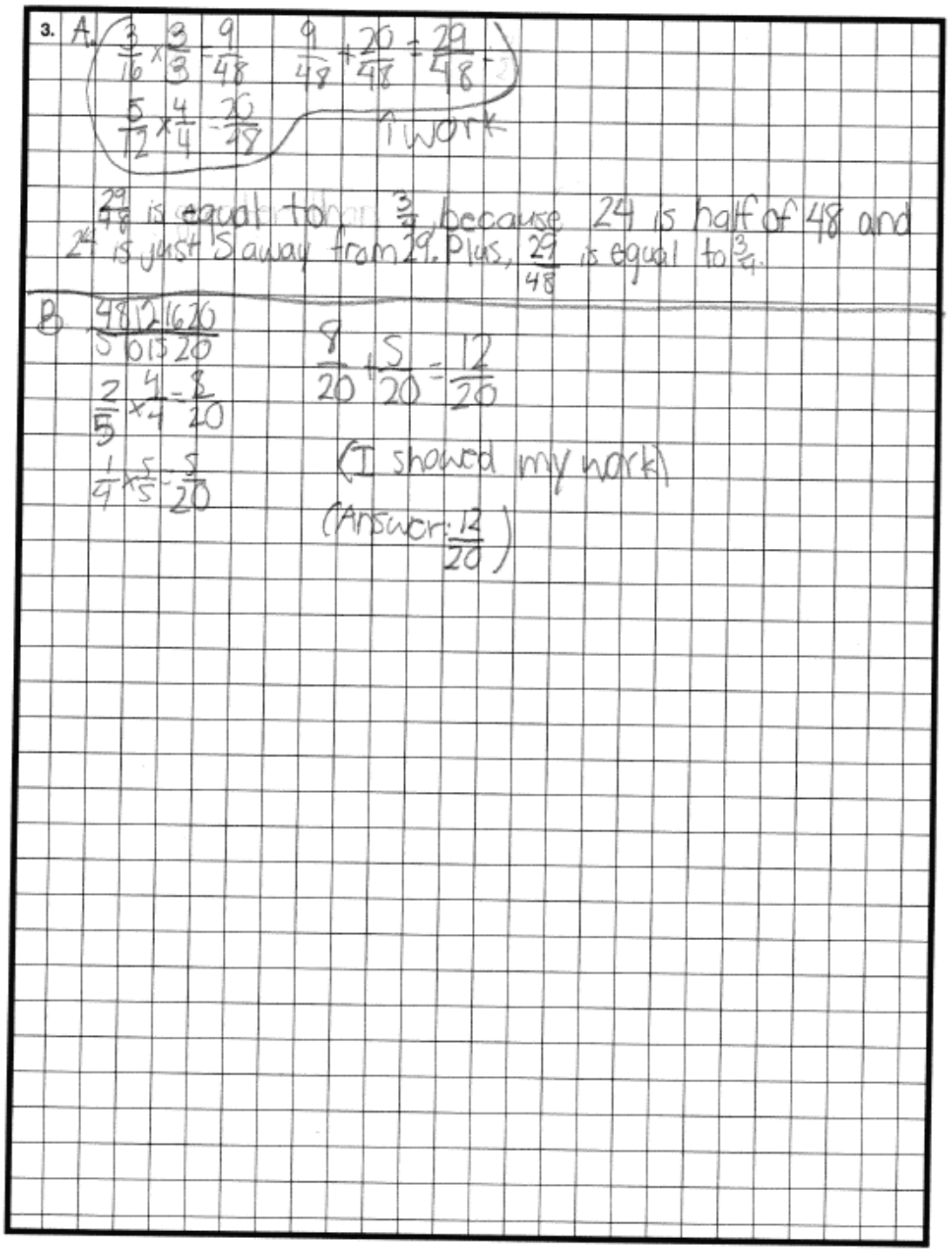
B The student has a correct answer *"13/20"* and correctly explains his thinking, converting the fractions to fractions with the lowest common denominator *"2/5 x 4/4 = 8/20, ¼ x 5/5 = 5/20"* and then adding *"8/20 + 5/20 = 13/20"*. (2 points)

Overall, the student earns 2.0 points.

GRADE 5 —Mathematics

Annotated Student Response

SAMPLE 1-POINT RESPONSE **NOTES**



A .5

B .5

GRADE 5 —Mathematics

ANNOTATION - 1-POINT RESPONSE

A The student has an incorrect answer *"29/48 = 3/4"* but the work shown contains some correct procedure. The student does not estimate, but rather finds the exact fraction of of the total points scored by Layla and Aubrey. *"3/16 x 3/3 = 9/48, 5/12 x 4/4 = 20/48, 9/48 + 20/48 = 29/48"*. (0.5 points)

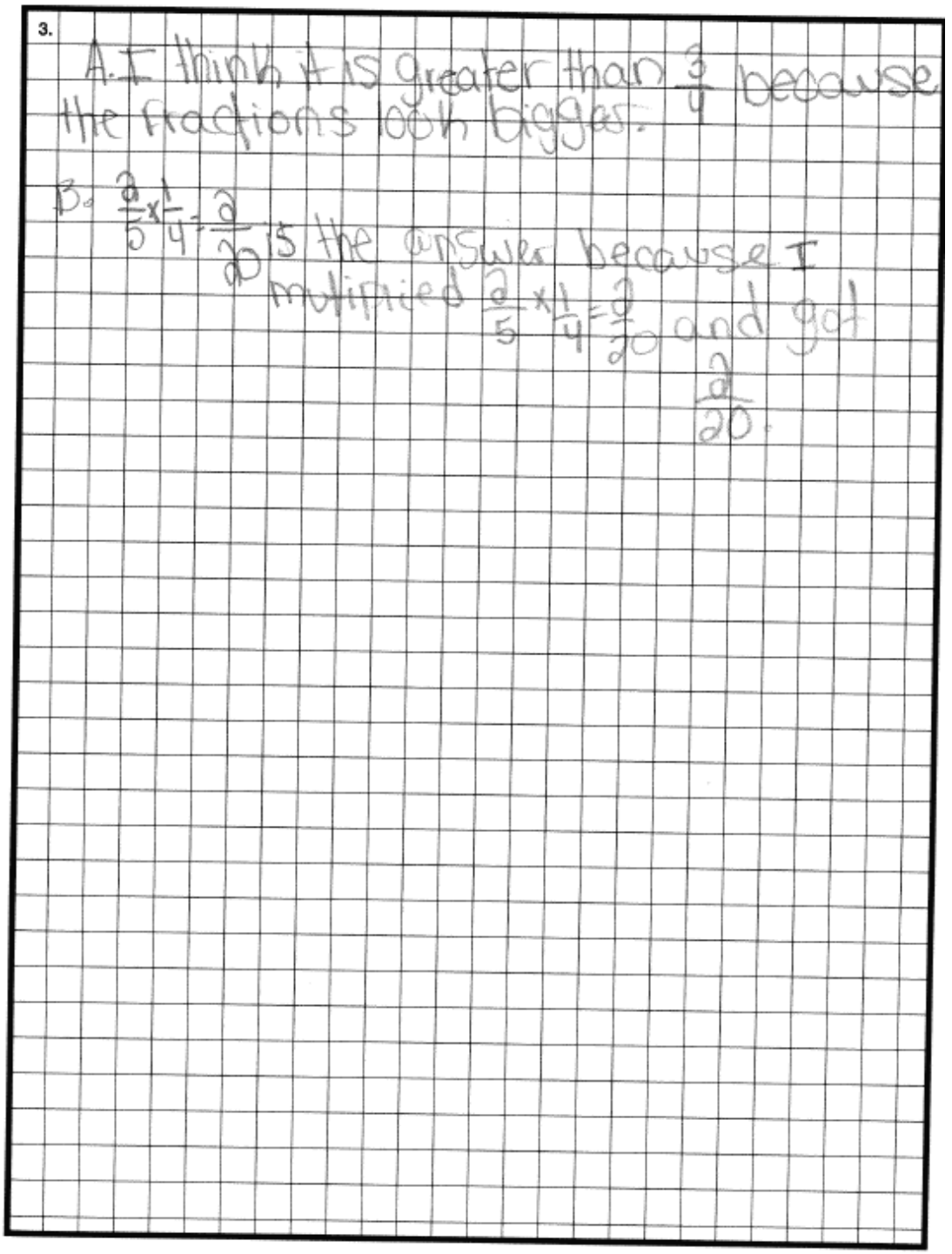
B The student has an incorrect answer *"12/20"* due to a calculation error. The student correctly converts the two fractions to 20ths *"2/5 x 4/4 = 8/20, ¼ x 5/5 = 5/20"* but makes an addition error *"8/20 + 5/20 = 12/20"*. (0.5 points)

Overall, the student earns 1.0 points.

GRADE 5 —Mathematics

Annotated Student Response

SAMPLE 0-POINT RESPONSE **NOTES**



A 0.0

B 0.0

GRADE 5 —Mathematics

ANNOTATION - 0-POINT RESPONSE

A The student provides an incorrect answer *"greater"* and an incorrect explanation *"…because the fractions look bigger."* (0 points)

B The student provides an incorrect answer "2/20" and an incorrect explanation *"2/5 x ¼ = 2/20."* The student multiplies the two fractions rather than adding them. (0 points)

Overall, the student earns 0 points.

Item Information

Question Number	Key	DOK*	KCAS Primary Standard**
1	D	2	5.MD.5.a
2	A	2	5.NF.7.c
3	A	2	5.NBT.7
4	A	1	5.OA.1
5	C	2	5.NBT.6
6	NA	2	5.OA.3
7	NA	2	5.G.2
8	NA	3	5.NF.2

*DOK is the abbreviation for Depth of Knowledge. Please note that DOK is associated to the complexity level of an assessment item and is not aligned to the standard. Further information regarding DOK can be accessed on the Kentucky Department of Education Web site: http://education.ky.gov/curriculum/docs/Pages/Content-Specific-Core-Content-for-Assessment-DOK-Support-Materials.aspx

**Further information regarding Common Core Standards can be accessed on the Common Core Web site: http://www.corestandards.org